

AD 648242



NEL-Sponsored
Report 37/67

The investigation Reported herein

Was Conducted Under

Contract Number 615 33 239866

for the

U. S. NAVY
MARINE ENGINEERING LABORATORY

Annapolis, Maryland
21402

FEASIBILITY OF USING
THE GORATOR PUMP
TO DISPOSE OF GALLEY WASTE

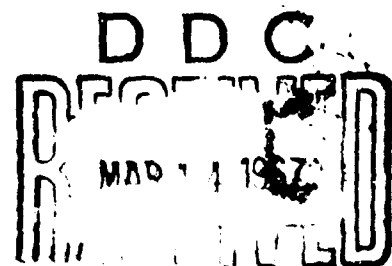
Submitted to:

U. S. Navy
Marine Engineering Laboratory
Annapolis, Maryland

Submitted by:

Dorr-Oliver Incorporated
Stamford, Connecticut

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June 1966

I. CLIENT:

U. S. Navy
Marine Engineering Laboratory
Annapolis, Maryland

II. OBJECT OF TESTS:

To demonstrate the ability of the Gorator pump to produce a slurry of a submarine galley waste. A typical daily galley waste from a submarine is as follows:

Metal food containers	- 70#
Bottles and jars	- 5#
Paper, plastics, treated cartons	- 15#
Cloth, sacks, oil rags	- 5#
Fibre board cases	- 31#
Wood	- 13#
Bones, egg shells	- 5#
Garbage	- 75#
	<u>219#</u>

III. SAMPLE:

The prementioned galley waste materials were collected separately from the Hazleton, Pennsylvania area. They were stored in cardboard containers until the demonstration tests.

IV. TEST APPARATUS:

Figure 1 of the Appendix is a schematic diagram of the Gorator test stand. The waste material was fed into a hopper which contained at least 15 gallons of water for all tests. The waste material entering the pump, which operated at 1100 rpm, was powered by a 50 horsepower motor. The material crushed in the pump was recycled and was detained in the system at times ranging between 2 to 15 minutes. At the end of the test the valve was opened and solid material (what remained) was caught on a DSM screen for a visual observation.

Figure 2 of the Appendix is a photograph of the internal construction of the pump. The photo shows the rotor and the basket containing the stator teeth.

Figure 3 of the Appendix is a photograph of the discharge bars used for size control. The openings of the bars used in the tests reported herein were 1-1/2 inches.

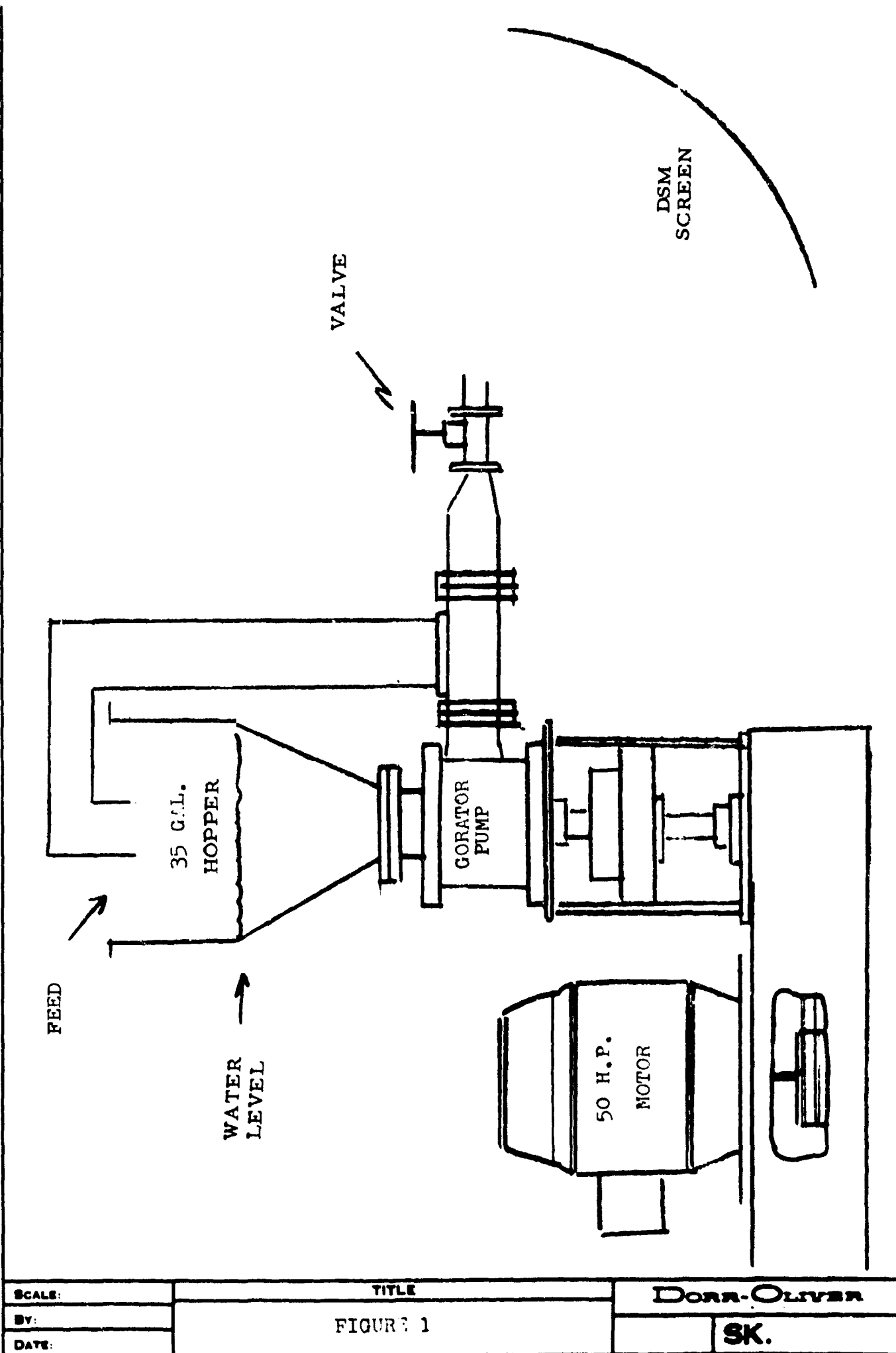
V. DETAILS OF TEST:

- A. The first test was run on a mixture of cans, soda bottles, jars, an oily glove, and a belt. The test was run for two minutes and then the valve was opened and the waste material was sprayed onto a DSM screen. A visual observation was made of the grind. All the material was less than 3/4 of an inch and this consisted of slivers of metal.
- B. The second test was conducted by first making a slurry of water and cardboard. Tin cans were then added until it was noticed that the recycle system was plugged. The recycle pipe was dismantled and unplugged. Apparently a tin can had plugged the system from the previous week's run when no restriction bars were used within the unit. The recycle was reassembled and a water test was made which demonstrated excellent velocity of the recycle stream.
- C. The third test consisted of weighing 5.0 pounds of combined waste material (tin cans, rags, paper, wood, etc.) and feeding it along with 15.2 gallons of water to the pump. The test was run for a period of 15 minutes. At the end of the test the sample was sprayed onto the DSM screen and a sample was collected for the client.
- D. The fourth test was run with a beef bone fed along with some cardboard and tin cans. The test was discontinued after thirteen minutes when it was noted that the water level was not constant due to the inlet water not having been turned off. An excellent grind was attained and the client obtained a sample.
- E. The fifth test consisted of weighing 12.0 pounds of solids containing various materials (mostly bones and tin cans) and feeding to the unit. Fifteen gallons of water were used for the slurry. The test was run for 15 minutes and then sprayed onto the DSM screen. The grind appeared to be very fine (< 1/4 inch) and a sample was obtained for the client.

VI. CONCLUSIONS:

- A. The test run successfully demonstrated the feasibility of using a Gorator pump to produce a fine grind for submarine galley waste disposal.

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SCALE:	TITLE	DORR-OLIVER	
BY:	FIGURE 1		
DATE:		SK.	

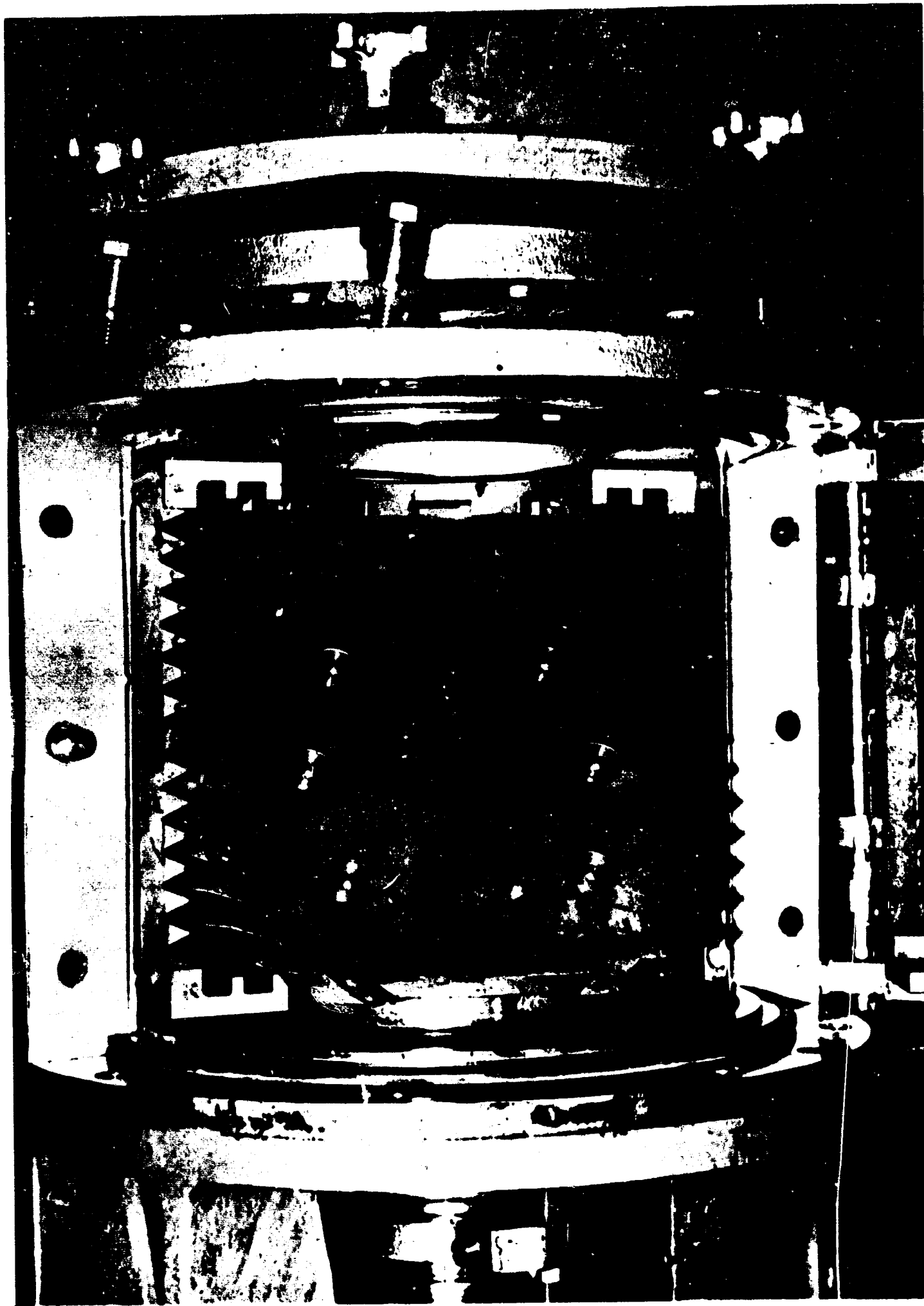


FIGURE 2

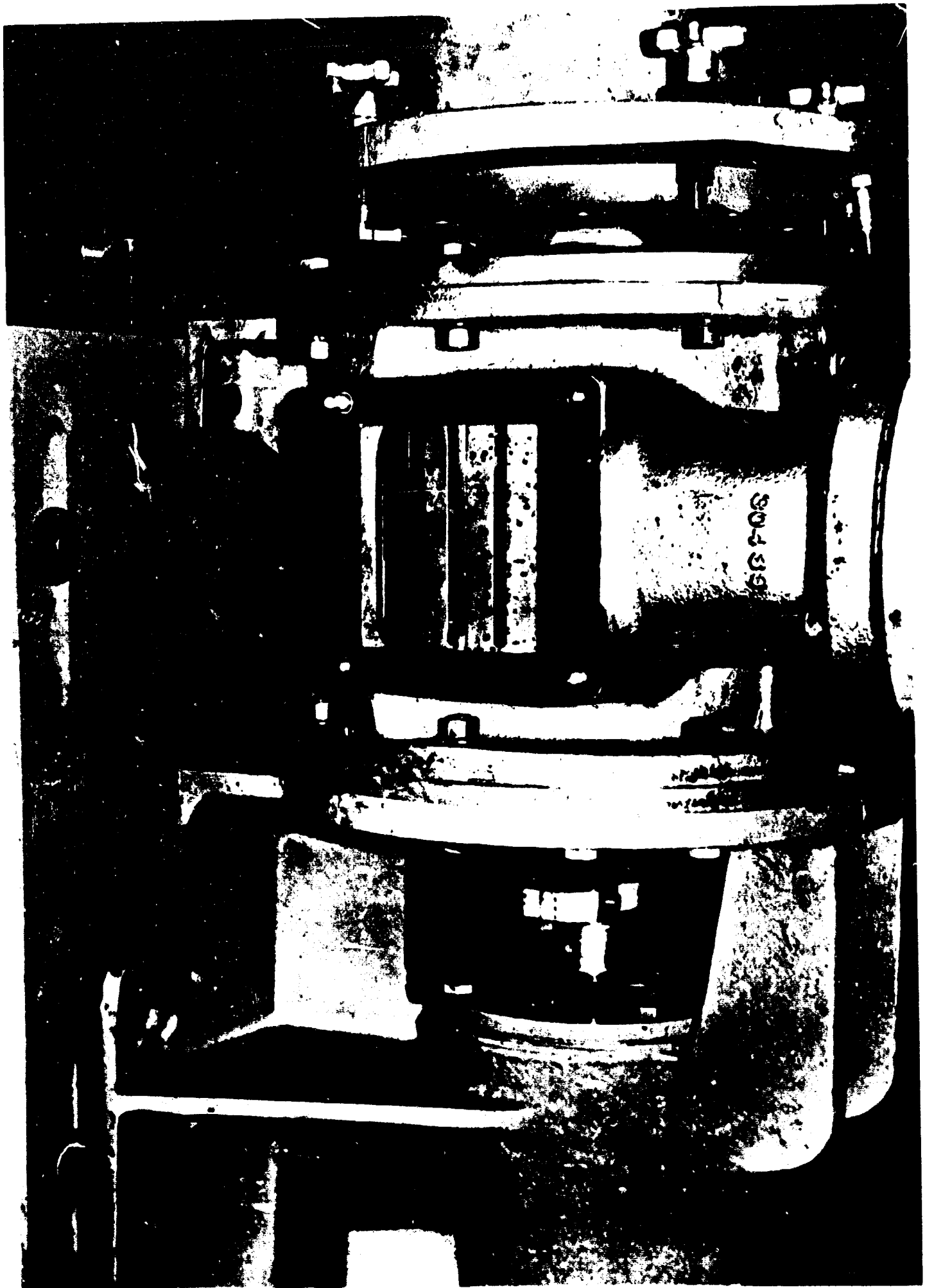


FIGURE 1



UNITED STATES NAVY
MARINE ENGINEERING LABORATORY


ANNAPOLIS, MARYLAND — 21402
AREA CODE 301 268-7711

IN REPLY REFER TO:

NP/9470(733 WRC)
Assigt 73 126
Rept 37/67
10 MAR 1967

From: Commanding Officer and Director
To: Commander, Naval Ship Engineering Center (SFC 6136D)
Subj: MEL Research and Development Phase Report 37/67; Transmittal
of

1. Transmitted herewith is MEL Research and Development Report 37/67, "Feasibility of Using the Gorator Pump to Dispose of Galley Waste," covering work done by Dorr-Oliver, Inc., under MEL Assignment 73 126, Contract No. 61533-2398-66.


E. M. HERRMANN
By direction

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DOCUMENT CONTROL DATA - R&D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) U. S. Navy Marine Engineering Laboratory Annapolis, Maryland 21402		2a. REPORT SECURITY CLASSIFICATION Unclassified	
		2b. GROUP	
3. REPORT TITLE Feasibility of Using the Gorator Pump to Dispose of Galley Waste			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Contractor's report			
5. AUTHOR(S) (Last name, first name, initial) Corporate author -- Dorr-Oliver Incorporated			
6. REPORT DATE June 1966		7a. TOTAL NO. OF PAGES 4	7b. NO. OF REFS
8a. CONTRACT OR GRANT NO. 615 33 239866		9a. ORIGINATOR'S REPORT NUMBER(S) MEL Report 37/67	
b. PROJECT NO. S-F013 08 10			
c. Task 2709		9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report) Assigt 73 126	
d.			
10. AVAILABILITY/LIMITATION NOTICES 4			
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY	
13. ABSTRACT Waste materials, typical of shipboard refuse, were reduced using a Gorator pump. The resultant products were less than 1/4 inch.			

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14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
1. Waste disposal						
2. Shipboard refuse						
3. Gorator pump						

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